

## Recurrent epistaxis in children

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### ABSTRACT


**INTRODUCTION:** Up to 9% of children may have recurrent nosebleeds, usually originating from the anterior septum, but the majority grow out of the problem. **METHODS AND OUTCOMES:** We conducted a systematic review and aimed to answer the following clinical question: What are the effects of treatments for recurrent idiopathic epistaxis in children? We searched: Medline, Embase, The Cochrane Library, and other important databases up to June 2013 (Clinical Evidence reviews are updated periodically; please check our website for the most up-to-date version of this review). We included harms alerts from relevant organisations such as the US Food and Drug Administration (FDA) and the UK Medicines and Healthcare products Regulatory Agency (MHRA). **RESULTS:** We found 5 systematic reviews or RCTs that met our inclusion criteria. We performed a GRADE evaluation of the quality of evidence for interventions. **CONCLUSIONS:** In this systematic review we present information relating to the effectiveness and safety of the following interventions: antiseptic cream (containing chlorhexidine hydrochloride, neomycin sulfate, or both), petroleum jelly, and silver nitrate cautery.

### QUESTIONS

What are the effects of treatments for recurrent idiopathic epistaxis in children? . . . . . 3

### INTERVENTIONS

#### TREATING RECURRENT EPISTAXIS

 **Likely to be beneficial**

Antiseptic cream (containing chlorhexidine hydrochloride plus neomycin sulfate) . . . . . 3

 **Unknown effectiveness**

Petroleum jelly . . . . . 6

Silver nitrate cautery . . . . . 7

### Key points

- Up to 9% of children may have recurrent nosebleeds, usually originating from the anterior septum, but the majority grow out of the problem.  
Nosebleeds may be associated with local inflammation and trauma, including nose picking.
- Antiseptic cream** (containing chlorhexidine hydrochloride plus neomycin sulfate) may reduce nosebleeds compared with no treatment, and may be as effective as **silver nitrate cautery**.  
Such creams may smell and taste unpleasant.  
Silver nitrate cautery is usually painful even if local anaesthesia is used.  
Simultaneous bilateral cautery is not recommended owing to the possible increased risk of perforation of the septum.
- Antiseptic cream (containing chlorhexidine hydrochloride plus neomycin sulfate) plus silver nitrate cautery may be more effective at reducing the frequency and severity of nosebleeds than antiseptic cream alone.  
We don't know whether **petroleum jelly** speeds up resolution of recurrent bleeding compared with no treatment.

### Clinical context

#### GENERAL BACKGROUND

Recurrent idiopathic epistaxis is self-limiting nasal bleeding for which no specific cause is identified. It occurs in up to 9% of children, and it is likely that only the most severe episodes are considered for treatment. This review looks at possible treatment options for children aged 1–16 years with recurrent epistaxis.

#### FOCUS OF THE REVIEW

This review includes evidence on commonly used interventions including antiseptic cream (containing chlorhexidine hydrochloride, neomycin sulfate or both), petroleum jelly, silver nitrate cautery, and combinations of these agents. It looks at how effective these treatments are at reducing the frequency and severity of nosebleeds whilst causing minimal adverse effects. Epistaxis caused by other specific local factors (e.g., tumours) or systemic factors (e.g., clotting disorders) is not considered here.

#### COMMENTS ON EVIDENCE

For what is a relatively common condition, we found few RCTs that met our quality criteria. Although most of the evidence we found was of low overall quality and we found no individual RCTs with above 110 children, we did find at least one RCT on each of our treatments of interest.

## SEARCH AND APPRAISAL SUMMARY

The literature search for this update was conducted in June 2013. For more information on the databases searched and methods used for critical appraisal, please see the Methods section. The search identified 9 results, of which 5 were further appraised following de-duplication and removal of conference abstracts. We obtained full text papers for 4 articles and eventually included one systematic review<sup>[1]</sup> with evidence on all included interventions.

## ADDITIONAL INFORMATION

Our contributor noted that silver nitrate cautery is usually painful even if local anaesthesia is used and simultaneous bilateral cautery is not recommended due to the possible increased risk of perforation of the septum.

<b>DEFINITION</b>	Recurrent idiopathic epistaxis is recurrent, self-limiting nasal bleeding for which no specific cause is identified. There is no consensus on the frequency or severity of recurrences. This review includes evidence on children aged 1–16 years with recurrent idiopathic epistaxis. Epistaxis caused by other specific local factors (e.g., tumours) or systemic factors (e.g., clotting disorders) is not considered here.
<b>INCIDENCE/ PREVALENCE</b>	A cross-sectional study of 1218 children (aged 11–14 years) found that 9% had frequent episodes of epistaxis. <sup>[2]</sup> It is likely that only the most severe episodes are considered for treatment.
<b>AETIOLOGY/ RISK FACTORS</b>	In children, most epistaxis occurs from the anterior part of the septum in the region of Little's area (Kiesselbach's plexus). <sup>[3]</sup> Initiating factors include local inflammation, mucosal drying, and local trauma (including nose picking). <sup>[3]</sup>
<b>PROGNOSIS</b>	Recurrent epistaxis is less common in people aged over 14 years, and many children 'grow out of' this problem.
<b>AIMS OF INTERVENTION</b>	To reduce the number and severity of epistaxis episodes; to minimise adverse effects of treatment.
<b>OUTCOMES</b>	<b>Nosebleeds</b> , including number and severity of epistaxis episodes; <b>adverse effects</b> of treatment.
<b>METHODS</b>	<i>Clinical Evidence</i> search and appraisal June 2013. The following databases were used to identify studies for this systematic review: Medline 1966 to June 2013, Embase 1980 to June 2013, and The Cochrane Database of Systematic Reviews 2013, issue 2 (1966 to date of issue). Additional searches were carried out in the Database of Abstracts of Reviews of Effects (DARE) and the Health Technology Assessment (HTA) database. We also searched for retractions of studies included in the review. Titles and abstracts identified by the initial search, run by an information specialist, were first assessed against predefined criteria by an evidence scanner. Full texts for potentially relevant studies were then assessed against predefined criteria by an evidence analyst. Studies selected for inclusion were discussed with an expert contributor. All data relevant to the review were then extracted by an evidence analyst. Study design criteria for inclusion in this review were: published RCTs and systematic reviews of RCTs in any language, containing at least 20 individuals (at least 10 per arm) of whom at least 80% were followed up. There was no minimum length of follow-up and we included both blinded and non-blinded studies. We included RCTs and systematic reviews of RCTs where harms of an included intervention were assessed, applying the same study design criteria for inclusion as we did for benefits. In addition, we use a regular surveillance protocol to capture harms alerts from organisations such as the FDA and the MHRA, which are added to the reviews as required. To aid readability of the numerical data in our reviews, we round many percentages to the nearest whole number. Readers should be aware of this when relating percentages to summary statistics such as relative risks (RRs) and odds ratios (ORs). We have performed a GRADE evaluation of the quality of evidence for interventions included in this review (see table, p 9 ). The categorisation of the quality of the evidence (high, moderate, low, or very low) reflects the quality of evidence available for our chosen outcomes in our defined populations of interest. These categorisations are not necessarily a reflection of the overall methodological quality of any individual study, because the Clinical Evidence population and outcome of choice may represent only a small subset of the total outcomes reported, and population included, in any individual trial. For further details of how we perform the GRADE evaluation and the scoring system we use, please see our website ( <a href="http://www.clinicalevidence.com">www.clinicalevidence.com</a> ).

**QUESTION** What are the effects of treatments for recurrent idiopathic epistaxis in children?

**OPTION** ANTISEPTIC CREAMS (CONTAINING CHLORHEXIDINE HYDROCHLORIDE, NEOMYCIN SULFATE, OR BOTH)

- For GRADE evaluation of interventions for Recurrent epistaxis in children, [see table, p 9](#).
- Antiseptic cream (containing chlorhexidine hydrochloride plus neomycin sulfate) increases the proportion of children with complete resolution of bleeding compared with no treatment, but we don't know if it reduces the total number of post-treatment bleeds. Antiseptic cream may be as effective as silver nitrate cautery.
- Antiseptic cream (containing chlorhexidine hydrochloride plus neomycin sulfate) plus silver nitrate cautery may be more effective at reducing the frequency and severity of nosebleeds than antiseptic cream alone.
- Antiseptic creams may smell and taste unpleasant.



## Benefits and harms

### Antiseptic cream (containing chlorhexidine hydrochloride plus neomycin sulfate) versus no treatment:

We found one systematic review (search date 2012 <sup>[1]</sup>), which included one RCT that met our inclusion criteria. <sup>[4]</sup> The RCT compared antiseptic cream (chlorhexidine hydrochloride 0.1%, neomycin sulfate 3250 U/g) applied to both nostrils twice-daily for 4 weeks versus no treatment. We have reported results directly from the RCT. <sup>[4]</sup> However, the systematic review included one further analysis, which we have also reported. <sup>[1]</sup>

### Nosebleeds

*Antiseptic cream compared with no treatment* Antiseptic cream (containing chlorhexidine hydrochloride plus neomycin sulfate) may be more effective than no treatment at increasing the proportion of children with complete resolution of bleeding at 8 weeks in children with recurrent epistaxis, but we don't know if it reduces the total number of post-treatment bleeding episodes ([very low quality evidence](#)).

Ref (type)	Population	Outcome, Interventions	Results and statistical analysis	Effect size	Favours
<b>Nosebleeds</b>					
<sup>[4]</sup> RCT	103 children aged 3–13 years with recurrent epistaxis for a mean of 20 months Unblinded design	<b>Proportion of children with complete resolution of bleeding, 8 weeks</b>  26/47 (55%) with antiseptic cream (chlorhexidine hydrochloride 0.1%, neomycin sulfate 3250 U/g)  12/41 (29%) with no treatment  Complete resolution of bleeding defined as no bleeding for 4 weeks  Antiseptic cream applied to both nostrils twice daily for 4 weeks	RR: 0.53 95% CI 0.31 to 0.91  NNT 4 95% CI 3 to 9		antiseptic cream
<sup>[1]</sup> Systematic review	103 children aged 3–13 years with recurrent epistaxis for a mean of 20 months	<b>Proportion of children with post-treatment bleeding, 8 weeks</b>  21/51 (41%) with antiseptic cream (chlorhexidine hydrochloride 0.1%, neomycin sulfate 3250 U/g)  29/52 (56%) with no treatment  15/103 (14.5%) participants in the RCT were lost to follow-up  The systematic review reported an intention-to-treat analysis  Antiseptic cream applied to both nostrils twice-daily for 4 weeks	P = 0.14		Not significant

## Adverse effects

No data from the following reference on this outcome. <sup>[1]</sup> <sup>[4]</sup>

### Antiseptic cream (containing chlorhexidine hydrochloride plus neomycin sulfate) versus silver nitrate cautery:

We found one systematic review (search date 2012 <sup>[1]</sup>), which included one RCT that met our inclusion criteria. <sup>[5]</sup> The RCT compared antiseptic cream (chlorhexidine hydrochloride 0.1%, neomycin sulfate 3250 U/g) applied to both nostrils twice-daily for 4 weeks versus silver nitrate cautery. <sup>[5]</sup> Cautery was undertaken in secondary care using silver nitrate applied on a stick to prominent vessels or bleeding points.

### Nosebleeds

*Antiseptic cream compared with cautery* We don't know whether antiseptic cream (containing chlorhexidine hydrochloride plus neomycin sulfate) and silver nitrate cautery differ in effectiveness in reducing nosebleeds in children with recurrent epistaxis ([low quality evidence](#)).

Ref (type)	Population	Outcome, Interventions	Results and statistical analysis	Effect size	Favours
<b>Nosebleeds</b>					
<sup>[5]</sup> RCT	48 children aged 3–14 years with at least 1 episode of epistaxis during the previous 4 weeks and a history of repeated epistaxis	<b>Complete resolution of bleeding , 8 weeks</b>  12/24 (50%) with antiseptic cream (chlorhexidine hydrochloride 0.1%, neomycin sulfate 3250 U/g)  13/24 (54%) with silver nitrate cautery  Antiseptic cream applied to both nostrils twice-daily for 4 weeks  Complete resolution of bleeding defined as no bleeding for 4 weeks	Reported as no significant difference between groups  P value not reported	↔	Not significant
<sup>[5]</sup> RCT	48 children aged 3–14 years with at least 1 episode of epistaxis during the previous 4 weeks and a history of repeated epistaxis	<b>Proportion of children with 50% reduction in number of bleeds during the past 4 weeks , 8 weeks</b>  4/24 (17%) with antiseptic cream (chlorhexidine hydrochloride 0.1%, neomycin sulfate 3250 U/g)  3/24 (13%) with silver nitrate cautery  Antiseptic cream applied to both nostrils twice-daily for 4 weeks	Reported as no significant difference between groups  P value not reported	↔	Not significant
<sup>[5]</sup> RCT	48 children aged 3–14 years with at least 1 episode of epistaxis during the previous 4 weeks and a history of repeated epistaxis	<b>Failure to resolve bleeding (proportion of children with &lt;50% reduction in number of bleeds in past 4 weeks) , 8 weeks</b>  7/24 (29%) with antiseptic cream (chlorhexidine hydrochloride 0.1%, neomycin sulfate 3250 U/g)  6/24 (25%) with silver nitrate cautery  Antiseptic cream applied to both nostrils twice-daily for 4 weeks  Complete resolution of bleeding defined as no bleeding for 4 weeks	Reported as no significant difference between groups  P value not reported	↔	Not significant

## Adverse effects

Ref (type)	Population	Outcome, Interventions	Results and statistical analysis	Effect size	Favours
<b>Adverse effects</b>					
[5] RCT Crossover design	48 children aged 3–14 years with at least 1 episode of epistaxis during the previous 4 weeks and a history of repeated epistaxis	<b>Adverse effects</b> with antiseptic cream (chlorhexidine hydrochloride 0.1%, neomycin sulfate 3250 U/g) with silver nitrate cautery Absolute results not reported Antiseptic cream applied to both nostrils twice-daily for 4 weeks The RCT found no adverse effects with antiseptic cream, but some children found the smell and taste unpleasant Chlorhexidine/neomycin cream may cause occasional skin reactions All children undergoing cautery experienced pain, even with 5% cocaine as a local anaesthetic			

No data from the following reference on this outcome. [5]

## Antiseptic cream (containing chlorhexidine hydrochloride plus neomycin sulfate) alone versus antiseptic cream plus silver nitrate cautery:

We found one systematic review (search date 2012 [1]), which included one RCT that met our inclusion criteria. [6] The RCT compared antiseptic cream (chlorhexidine hydrochloride 0.1%, neomycin sulfate 3250 U/g) applied twice-daily for 4 weeks plus silver nitrate cautery versus antiseptic cream alone. [6]

## Nosebleeds

*Antiseptic cream plus cautery compared with antiseptic cream alone* Antiseptic cream (containing chlorhexidine plus neomycin sulfate) plus silver nitrate cautery may be more effective than antiseptic cream alone at reducing the frequency and severity of nosebleeds at 4 weeks after finishing treatment (low-quality evidence).

Ref (type)	Population	Outcome, Interventions	Results and statistical analysis	Effect size	Favours
<b>Nosebleeds</b>					
[6] RCT	109 children with epistaxis and visible anterior septal vessels	<b>Complete resolution of nosebleeds, 4 weeks after treatment</b> 14/47 (30%) with antiseptic cream alone 21/46 (46%) with antiseptic cream plus silver nitrate cautery	P = 0.11	↔	Not significant
[6] RCT	109 children with epistaxis and visible anterior septal vessels	<b>Reduced frequency and severity of bleeds as assessed by parents or children, 4 weeks after treatment</b> 33/47 (70%) with antiseptic cream alone	P = 0.01 NNT 5 95% CI 3 to 19 The subjective assessment of this outcome may have introduced bias	○○○	antiseptic cream plus silver nitrate cautery

Ref (type)	Population	Outcome, Interventions	Results and statistical analysis	Effect size	Favours
		42/46 (91%) with antiseptic cream plus silver nitrate cautery			

## Further information on studies

- [4] Some commercial antiseptic creams contain arachis (peanut) oil, and the RCT excluded all children with peanut allergies. A retrospective analytical cohort study of 88 of the 103 children treated in 2001 was carried out in 2006. [7] The retrospective study found that, despite initial benefit from antiseptic creams, 65% of children surveyed were still experiencing recurrent epistaxis 5 years after treatment with antiseptic creams. Those who had undergone cautery and received antiseptic cream had the highest ongoing bleeding rate (77%). The authors concluded, however, that this does not provide evidence that cautery is ineffective, and may instead be due to the fact that this treatment group comprised children with the most persistent bleeding.
- [5] This RCT was undertaken in the context of secondary care. Silver nitrate cautery is also used in primary care. It is unknown whether complication rates differ.
- [6] This trial was carried out in children aged 1 to 13 years, with a mean age of 7.4 years. Most had symptoms for at least 1 year before joining the trial, and the frequency of nosebleeds ranged from 6 times per day to 1 per month. The treatment group had silver nitrate cautery, and the control group had sham cautery. Both groups then used topical antiseptic cream twice per day for 4 weeks. The children were followed up in clinic 8 weeks later, and were assessed on symptoms in the 4 weeks before follow-up.

**Comment:** Antiseptic creams may smell and taste unpleasant.

### Antiseptic creams versus cautery:

See comment on silver nitrate cautery, p 7 .

## OPTION PETROLEUM JELLY

- For GRADE evaluation of interventions for Recurrent epistaxis in children, see table, p 9 .
- We don't know whether petroleum jelly speeds up resolution of recurrent bleeding compared with no treatment.

## Benefits and harms

### Petroleum jelly versus no treatment:

We found one systematic review (search date 2012 [1] ), which included one small RCT that met our inclusion criteria.

[8] The RCT compared petroleum jelly applied to both nostrils twice-daily for 4 weeks versus no treatment. [8]

### Nosebleeds

*Petroleum jelly compared with no treatment* Petroleum jelly seems no more effective than no treatment at increasing the proportion of children with complete resolution of bleeding at 8 weeks in children with recurrent epistaxis (moderate-quality evidence).

Ref (type)	Population	Outcome, Interventions	Results and statistical analysis	Effect size	Favours
<b>Nosebleeds</b>					
[8] RCT	105 children (aged 1–14 years)	<b>Complete resolution of bleeding , 8 weeks</b> 14/51 (27%) with petroleum jelly 18/53 (34%) with no treatment Petroleum jelly applied to both nostrils twice-daily for 4 weeks	P = 0.47	↔	Not significant

Ref (type)	Population	Outcome, Interventions	Results and statistical analysis	Effect size	Favours
		Complete resolution of bleeding defined as no bleeding in the past 4 weeks			

## Adverse effects

No data from the following reference on this outcome. <sup>[8]</sup>

## Further information on studies

### Comment:

OPTION	SILVER NITRATE CAUTERY
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- For GRADE evaluation of interventions for Recurrent epistaxis in children, [see table, p 9](#) .
- Silver nitrate cautery is usually painful even if local anaesthesia is used.
- Simultaneous bilateral cautery is not recommended owing to the possible increased risk of perforation of the septum.

## Benefits and harms

### Silver nitrate cautery versus no treatment:

We found no direct information from RCTs about whether silver nitrate cautery is better than no active treatment in children with recurrent epistaxis.

### Silver nitrate cautery versus antiseptic cream:

See option on antiseptic creams, p 3 .

### Silver nitrate cautery plus antiseptic cream versus antiseptic cream alone:

See option on antiseptic creams, p 3 .

### Comment:

Recognised complications of cautery include pain and septal perforation, although the incidence of septal perforation following unilateral cautery in children is not known. Silver nitrate cautery is usually painful even if local anaesthesia is used.

### Clinical guide

Simultaneous bilateral cautery in children is not recommended because of an expected increased risk of septal perforation. No data exist on the size of any risk from bilateral simultaneous cautery.

## GLOSSARY

**Low-quality evidence** Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.

**Moderate-quality evidence** Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.

**Very low-quality evidence** Any estimate of effect is very uncertain.

## SUBSTANTIVE CHANGES

**Antiseptic cream** (containing chlorhexidine hydrochloride, neomycin sulfate, or both) One systematic review added. <sup>[1]</sup> Previously reported treatment option included all antiseptic creams. Now limited to antiseptic creams containing chlorhexidine hydrochloride, neomycin sulfate, or both. Categorisation unchanged (Likely to be beneficial).

**Petroleum jelly** One systematic review added. <sup>[1]</sup> Categorisation unchanged (Unknown effectiveness).

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Competing interests: GWM declares that he has no competing interests.

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## GRADE Evaluation of interventions for Recurrent epistaxis in children.

Important out-comes	Nosebleeds								
Studies (Partici-pants)	Outcome	Comparison	Type of evi-dence	Quality	Consistency	Directness	Effect size	GRADE	Comment
What are the effects of treatments for recurrent idiopathic epistaxis in children?									
1 (103) <sup>[4]</sup>	Nosebleeds	Antiseptic cream (containing chlorhexidine hydrochloride plus neomycin sulfate) versus no treatment	4	−2	0	−1	0	Very low	Quality points deducted for sparse data and no blinding. Di-rectness point deducted for result dependent upon outcome measured
1 (48) <sup>[5]</sup>	Nosebleeds	Antiseptic cream (containing chlorhexidine hydrochloride plus neomycin sulfate) versus silver nitrate cautery	4	−2	0	0	0	Low	Quality points deducted for sparse data and incomplete re-ported of results
1 (109) <sup>[6]</sup>	Nosebleeds	Antiseptic cream (containing chlorhexidine hydrochloride plus neomycin sulfate) alone versus antiseptic cream plus silver nitrate cautery	4	−1	−1	0	0	Low	Quality point deducted for sparse data. Consistency point deducted for different results with different measures of outcome
1 (105) <sup>[8]</sup>	Nosebleeds	Petroleum jelly versus no treat-ment	4	−1	0	0	0	Moderate	Quality point deducted for sparse data
We initially allocate 4 points to evidence from RCTs, and 2 points to evidence from observational studies. To attain the final GRADE score for a given comparison, points are deducted or added from this initial score based on preset criteria relating to the categories of quality, directness, consistency, and effect size. Quality: based on issues affecting methodological rigour (e.g., incomplete reporting of results, quasi-randomisation, sparse data [<200 people in the analysis]). Consistency: based on similarity of results across studies. Directness: based on generalisability of population or outcomes. Effect size: based on magnitude of effect as measured by statistics such as relative risk, odds ratio, or hazard ratio.									